# MOBILITY SOLUTIONS TO SOUTHERN AFRICAN CHALLENGES: ROAD INFRASTRUCTURE AND RURAL ACCESS IN NAMIBIA

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## ABSTRACT

Well maintained and accessible road infrastructure in Southern Africa, including Namibia, is crucial for economic growth and social development. However, significant disparities persist, particularly in rural and low-income areas. While Namibia boasts one of the best road networks in Africa, many remote areas remain underserved due to unpaved and poorly maintained roadways. This paper examines the current state of road infrastructure in Namibia, identifies key challenges, and explores potential solutions tailored to the Namibian context and other southern African countries with similar mobility challenges. The study includes an analysis of historical inequalities, the impact of poor road conditions on economic development, and emerging solutions, including sustainable road construction, public-private partnerships, and regulatory reforms. The findings highlight the need for ongoing investments in road networks to improve connectivity, enhance rural economies, and promote equitable access to essential services. The study concludes that sustainable materials, creative engineering solutions, and stronger collaboration between policymakers, businesses, and communities are crucial for building a resilient and inclusive transportation system in Namibia.

## 1. INTRODUCTION

Namibia's road network serves as the backbone of its transportation system, contributing significantly to economic and social growth. The emphasis on robust road infrastructure has enabled the country to develop one of the best road networks in Africa, with construction and upkeep adhering to global standards (World Data, 2025). According to the latest survey by Statistica, Namibia achieved a remarkable 5.57 index rating out of 7 (see Figure 1), securing top spot for the best road infrastructure in Africa (The brief, 2024). Despite this achievement, major challenges persist, particularly in rural and low-income areas where many roads remain unpaved or in low-traffic volume conditions (World Data, 2025).

Historically, Namibia has relied heavily on road transportation coupled with the absence of a widespread public transit system. The lack of robust public transportation options has led to increased reliance on privately owned vehicles and transportation inequality particularly in urban areas (Yankson, 2022). This issue is especially evident in the capital, Windhoek, where rapid urbanisation, at a rate of 4.3% per annum compared to the national rate of 2.6% per annum, has placed immense pressure on the transportation network (MWT *et al*., 2013). Consequently, issues such as rising traffic congestion, high transport costs, and limited access persists. Addressing these challenges requires strategic interventions in road and public transport infrastructure across Namibia and other southern African countries to ensure a sustainable and efficient mobility network.

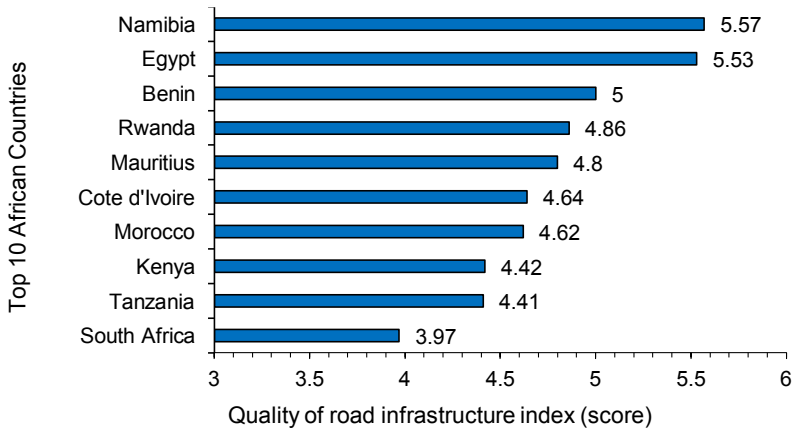


**Figure 1: Quality of road infrastructure for selected African countries in 2024 (Adapted from William Wanyoike, 2025)**

Beyond urban centres, road accessibility remains a major challenge in Namibia. While major highways connecting cities are well-maintained, many rural roads, most of which are gravel, as illustrated in Figure 2, require upgrades and expansion to support efficient transportation. Limited road connectivity in rural areas restricts economic development, making it difficult for residents to access essential services such as healthcare, education, and employment opportunities. These challenges are exacerbated by the expansion of informal settlements on city outskirts, driven by rural-urban migration, emphasising the urgent need for improved transportation infrastructure (Yankson, 2022). Additionally, the dominance of privately owned, fuel-powered automobiles has negatively contributed to climate change, air pollution, and land-use concerns (MWT *et al*., 2013). Addressing these challenges is not only vital for sustainable transport development, but also for economic growth. Investing in rural-road infrastructure would not only enhance the daily lives of residents but also contribute to national economic progress by promoting trade, tourism, and agricultural activities. Additionally, efficient transportation is crucial to ensuring that all Namibians, regardless of geography, have equitable access to essential services and economic opportunities, ultimately contributing to national progress (MWT *et al*., 2013).

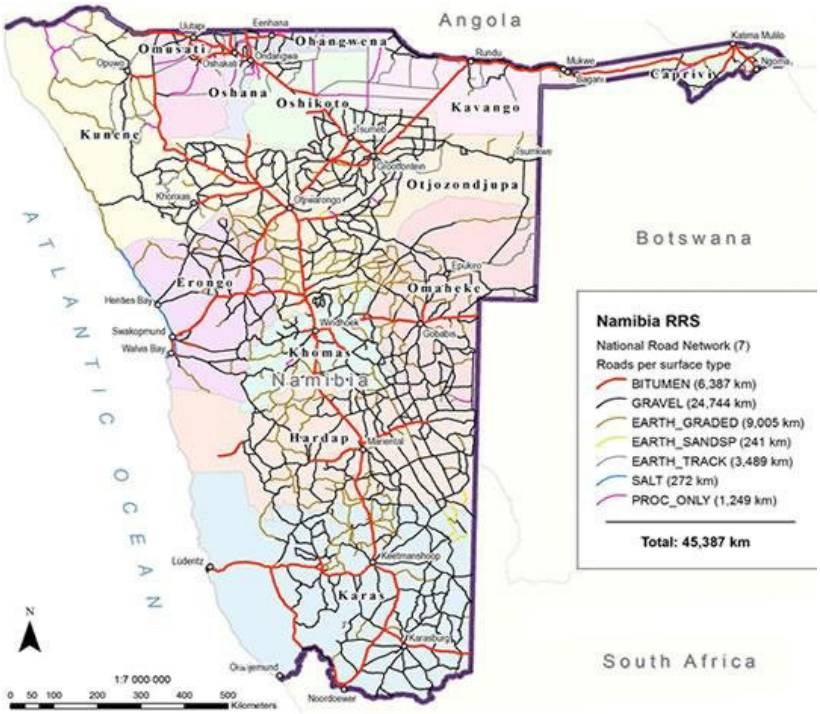


**Figure 2: Namibia's road network (Adapted from Fritze, 2013)**

This essay aims to examine the current state of road infrastructure in Namibia, identify key challenges related to road development and accessibility, and explore potential solutions and policy initiatives for improvement. By addressing these issues, Namibia and Southern African nations can work towards a more sustainable, efficient, and inclusive transportation system.

## 2. CURRENT ROAD INFRASTRUCTURE LANDSCAPE IN NAMIBIA

Transportation infrastructure remains an essential component of economic development in Namibia. Investments in road upgrades form a cornerstone of efforts to develop a well-connected and efficient transport network, reflecting a commitment to long-term national growth (ACT Logistics, 2024). The road network in Namibia comprises highways, gravel roads, and rural access roads, each playing a crucial role in linking urban centres to rural areas.

The Roads Authority (RA) of Namibia, established under Act 147 of 1999, is responsible for developing and maintaining road infrastructure. As of 2017, the RA managed a total of 48,875 km of roads across the country (World Data, 2025). The organisation's effectiveness in planning, designing, and maintaining road infrastructure ensures accessibility and functionality for both economic and social domains (MWT *et al*., 2013). Road maintenance is conducted through periodic maintenance programs, which include blading and graveling of roads, clearing and developing new proclaimed routes and existing tracks. These initiatives have contributed to the relatively high quality of Namibian roads. The organisation's success can be attributed to two critical factors: an effective maintenance strategy on existing road infrastructure, which plays an important role in extending lifespan; and the continuous upgrade and construction of new roads, which contribute significantly to the quality of national roads (Augetto Graig, 2025).

Despite these improvements, rural communities continue to face accessibility constraints. Reports from the Namibian Employers Federation (NEF) and the Namibian Association of Manufacturers (NMA) highlight that inefficient transportation is a major impediment to business expansion, particularly in informal settlements near the capital (MWT *et al*., 2013). Similarly, in northern Namibia, many remote areas contend with inadequate road infrastructure, restricting access to essential services, employment, and economic opportunities (MWT and GIZ GmbH, 2017). Addressing these disparities is critical for equitable development across the country.

## 3. KEY CHALLENGES IN ROAD INFRASTRUCTURE AND RURAL ACCESS

### 3.1 State of Rural Roads

Namibia's rural road infrastructure has been shaped by historical disparities. During the apartheid era, predominantly black residents were relocated to remote townships with limited infrastructure and poor service delivery, while wealthier neighbourhoods benefited from better road infrastructure and upkeep (Yankson, 2022). Today, road development remains a major concern, particularly in remote areas where infrastructure is severely lacking. Many rural roads remain unpaved and poorly maintained, limiting mobility and economic participation. This challenge is especially evident in the northwestern outskirts of Windhoek, where informal settlements, such as Goreangab, dominate the landscape, and road conditions remain poor, as shown in Figure 3 (MWT *et al*., 2013).

Source: Africa Press, 2021

**Figure 3: Unpaved road infrastructure in Goreangab, the outskirts of Windhoek**

### 3.2 Impact on Economic Development

Poor road conditions directly hinder economic growth, particularly in low-income rural and urban communities. Residents of informal settlements remain disconnected from economic centres, making transportation expensive and inefficient. The high transportation costs, coupled with poor infrastructure and service quality, place these communities at a significant disadvantage (Yankson, 2022). In northern Namibia, the issue is considerably more severe. Farmers and small businesses in rural areas face high transportation costs and limited road access, making it difficult to expand their operations and participate in regional markets (MWT and GIZ GmbH, 2017). Without improved road infrastructure, economic progress is hindered, intensifying poverty and inequality.

## 4. EMERGING SOLUTIONS FOR ROAD INFRASTRUCTURE IMPROVEMENTS

### 4.1 Road Development and Modernisation

Sustained investments in road infrastructure play a crucial role in improving connectivity and promoting economic growth. To achieve this, Namibia developed a masterplan, for the city of Windhoek, that provides a systematic approach to prioritising major investments. This approach assists policymakers in steering the country's capital toward an efficient, economical, and accessible transportation network (MWT *et al*., 2013). A similar strategy has been implemented in northern Namibia, where road construction efforts are aimed at incorporating sustainable mobility options in both urban and rural areas. These initiatives aim to increase mobility for all by ensuring long-term resilience and accessibility. Additionally, these initiatives seek to address concerns regarding transportation shortages in rural areas (MWT and GIZ GmbH, 2017). Moreover, as part of Pillar 4 (Goal 3) of the Namibian Harambee Prosperity Plan 2021-2024, focused on infrastructure development, Namibia aims to strengthen its position as a transport and logistics hub through the completion of ongoing bitumen roads (GRN Namibia, 2021).

### 4.2 Innovative Road-Building Materials and Techniques

Namibia's engineering and construction sectors have historically turned to locally available materials to overcome the country's geographical and economic challenges. From

traditional indigenous practices to modern innovations, natural resources have been central to infrastructure development (Lithon, 2024). Engineering companies in Namibia, like Lithon, have embraced this approach, utilising locally sourced materials to create sustainable and cost-effective solutions for Namibian communities (Lithon, 2024). This reliance on local materials is both a practical necessity and a strategic opportunity. As Namibia plans for the future, sustainable transportation options are becoming increasingly vital, driving demand for durable, low-cost materials including recycled materials and climate-resilient building techniques. According to the Ministry of Works and Transport, such innovations not only increase road longevity and withstand extreme weather but also lower maintenance costs (MWT *et al*., 2013). While challenges like quality variability and limited availability persist, the benefits of cost savings, environmental sustainability, and community empowerment make it a worthwhile initiative (Lithon, 2024).

### 4.3 Public-Private Partnerships

Stronger public-private partnerships (PPPs) are essential for funding and maintaining road networks in Namibia. At the local level, the governance framework for public transportation needs to be re-evaluated in order to clearly define the roles of various organisations and improve transport accessibility. A more accessible and secure public transportation system can be built through partnerships between government agencies and private parties, contributing to the sustainable growth of African cities (Yankson, 2022). In some cases, the business community has taken proactive measures to address transportation issues with many organisations providing private or company-owned buses to facilitate employee mobility, mitigating the impact of limited public transportation (MWT *et al*., 2013). Moreover, to ensure long-term urban planning, all rezoning applications and major commercial developments should include a Traffic/Transport Impact Assessment (TIA). This assessment must also consider the effects of active and public transportation movements to create a more efficient and inclusive transportation network (MWT *et al*., 2013).

## 5. IMPLEMENTATION STRATEGIES AND CHALLENGES

Government policies are critical in promoting road infrastructure development in Namibia, as the government highlights that addressing transportation issues may contribute to sustainable growth (MWT *et al*., 2013). In northern Namibia, a participatory planning approach was used to ensure that the transport master plan met local needs while remaining within available resources (MWT and GIZ GmbH, 2017). Successful road development necessitates active participation from both communities and the commercial sector, with stakeholders included from the start to obtain support for the final master plan (MWT *et al*., 2013); However, financial and logistical impediments continue to exist in project execution. Moreover, the sustainable transportation policy stresses road safety by lowering accident deaths and implementing solutions, with the goal of preserving road infrastructure (Yankson, 2022). Long-term road network resilience is also a goal, with the implementation of a new urban transport policy aimed at reducing reliance on private cars and taxis by encouraging public transportation options, resulting in a more sustainable and accessible mobility system (Yankson, 2022).

## 6. CONCLUSIONS

Improving Namibia's road infrastructure is essential for economic and social development. While urban road networks are well-maintained, rural areas remain underserved, limiting economic opportunities. Sustainable materials, innovative engineering, and stronger public-private partnerships (PPPs) are key solutions to ensure cost-effective, resilient, and

improved road infrastructure. Improved road networks will thus enhance rural accessibility and stimulate economic growth. The study further recommends that policymakers prioritise inclusive road development, businesses invest in innovative mobility solutions, and communities play an active role in planning processes. Through decisive action, Namibia and other Southern African countries facing similar transportation challenges can build a modern, inclusive, and resilient transport network.

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